REMARKS/ARGUMENTS

Claims 1-52 were pending in the present application. The present response amends claims 30, 33, 37, 41, and 47, leaving pending in the application claims 1-52. Reconsideration of the rejected claims is respectfully requested.

I. Rejection under 35 U.S.C. §112

Claims 30, 37, 41, and 47 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Particularly, these claims are rejected as lacking proper antecedent basis for the term "laser." Claims 30, 37, 41, and 47 have been amended to recite the term "laser resonator." This change is supported by the specification and does not add new matter. Applicants therefore respectfully request that the rejection with respect to claims 30, 37, 41, and 47 be withdrawn.

II. Rejection under 35 U.S.C. §102

Claims 1-7, 11-14, 18-21, 25-32, 36-40, and 44-49 are rejected under 35 U.S.C. §102(b) as being anticipated by *Cielo* (US 4,874,948).

Applicants' claim 1 requires a beam parameter monitoring unit for coupling with a molecular fluorine (F_2) or ArF laser resonator **that produces an output beam having a wavelength below 200 nm**, defined by:

> **an uncoated beam splitter formed of substantially material transparent to radiation having said wavelength below 200 nm** disposed to reflect a portion of the radiation in the output beam;
>
> **a detector for measuring at least one optical parameter of the output beam** portion reflected by the uncoated beam splitter; and
>
> **a beam path enclosure** containing said uncoated beam splitter and having an interior prepared such that an optical path of said beam portion through said enclosure from said laser resonator to said detector via said reflection by said beam splitter is **substantially free of photoabsorbing species that substantially photoabsorb radiation of said wavelength below 200 nm so that the beam portion reflected by said beam splitter reaches said detector without substantial attenuation from said photoabsorbing species**

(*emphasis added*). *Cielo* does not disclose such a unit. *Cielo* instead discloses an apparatus for "evaluating the degree of cure in polymeric composites" by "heating a surface portion of the polymeric composite to substantially curing temperature" and continuously monitoring the "surface temperature fluctuations" with an "infrared detector" (col. 1, lines 7-12; col. 2,

lines 1-15 and lines 47-60). *Cielo* does not disclose a detector capable of measuring an optical parameter of an output beam having a wavelength below 200 nm, but only discloses an infrared detector (col. 2, lines 47-60) capable of detecting infrared radiation, which is generally accepted to have a wavelength greater than 700nm (between 700nm and 350μm). As discussed in the present application on pages 2-3, for example, existing photodetectors have been shown to strongly degrade at wavelengths under 200nm (in the UV range). Not only is it not disclosed that the infrared detector of *Cielo* is capable of measuring light with a wavelength less than 200nm, but there is no teaching or suggestion that the infrared detector of *Cielo* could accurately measure such vacuum ultraviolet (VUV) light with any likelihood of success.

Further, claim 1 requires "an uncoated beam splitter" formed of material that is substantially transparent "to radiation having said wavelength below 200 nm" (VUV radiation). *Cielo* does not disclose such a beam splitter. Element 108 of *Cielo* (cited in the Office Action) instead is a "dichroic mirror" used to reflect light from the laser source to the sample, and to transmit infrared radiation from the sample to the infrared detector (see e.g., Fig. 2, col. 6, line 44-col. 6, line 4). It is not disclosed that the dichroic mirror is formed of a material that is substantially transparent to (UV) radiation having a wavelength below 200nm, but instead is disclosed that the dichroic mirror is transparent to infrared radiation. Indeed, Fig. 2 does not shown any radiation but infrared radiation being transmitted by the dichroic mirror.

Further still, claim 1 requires "a beam path enclosure" containing the uncoated beam splitter and having an interior wherein an optical path through the enclosure to the detector "is substantially free of photoabsorbing species that substantially photoabsorb radiation of said wavelength below 200 nm." There is no such disclosure in *Cielo*. *Cielo* discloses an "enclosure" 112 that contains the laser resonator, and receives infrared radiation from a heated sample (see e.g., Fig. 2, col. 6, line 44-col. 6, line 4). It is not disclosed that the enclosure of *Cielo* is substantially free of photoabsorbing species that substantially photoabsorb radiation of said wavelength below 200 nm, and in fact there is no teaching or suggestion that the heat from the sample and/or the laser system would not contaminate and/or degrade the optical components in the enclosure, leading to the production of such photoabsorbing species as discussed in the present application on page 2.

For reasons including those listed above, claim 1 cannot be anticipated by *Cielo*. Further still, the lack of any teaching or suggestion of these elements indicates that claim 1 also cannot be rendered obvious by *Cielo*.

Independent claims 12, 19, 26, 30, 37, and 47 also require detectors capable of detecting radiation having wavelengths less than 200nm, about 157 nm, or about 193nm. As discussed above with respect to claim 1, *Cielo* does not disclose such a detector. Further, there is no teaching or suggestion that the system of *Cielo* could be used to detect such wavelengths. Claims 12, 19, 26, 30, 37, and 47 therefore cannot be anticipated, or rendered obvious by, *Cielo*. As these claims are not anticipated (or rendered obvious) by *Cielo*, neither are claims 2-7, 11, 13-14, 18, 20-21, 25, 27-32, 36, 38-40, 44-46, and 48-49 anticipated or rendered obvious. Applicants therefore respectfully request that the rejection with respect to claims 1-7, 11-14, 18-21, 25-32, 36-40, and 44-49 be withdrawn.

III. Rejection under 35 U.S.C. §103

Claims 8-10, 15-17, 22-24, 33-35, 41-43, and 50-52 are rejected under 35 U.S.C. §103(a) as being obvious over *Cielo* in view of *Onkels* (US 6,330,260). *Onkels* is cited as teaching a "dispersive element" that can be "used to separate the VUV from the red/IR wavelengths" (col. 25, lines 52-63). Such teaching does not make up for the deficiencies in *Cielo* with respect to the cited claims. As discussed above, the system of Cielo is used to evaluate "the degree of cure in polymeric composites" by "heating a surface portion of the polymeric composite to substantially curing temperature" and continuously monitoring the "surface temperature fluctuations" with an "infrared detector" (col. 1, lines 7-12; col. 2, lines 1-15 and lines 47-60). As discussed above, *Cielo* does not teach or suggest a vacuum ultraviolet detector capable of measuring a parameter of a beam of light having a wavelength less than 200 nm. *Cielo* also fails to teach or suggest a beam path enclosure containing the uncoated beam splitter and having an interior wherein an optical path through the enclosure to said detector is substantially free of photoabsorbing species that substantially photoabsorb radiation of said wavelength below 200 nm. The dichroic mirror of *Cielo* already separates out the infrared radiation (see e.g., Fig. 2, col. 6, line 44-col. 6, line 4), such that there would be no need to use the dispersive element of *Onkels*, and combining the elements would not overcome the deficiencies in *Cielo* with respect to these claims.

Further, claims such as claim 8 require "means optically disposed between said resonator and said detector for separating said visible radiation from 157 nm radiation." Onkels does not teach or suggest that the dispersive element can separate visible radiation from 157 nm radiation, only that the dispersive element can separate "VUV from the red/IR wavelengths" (col. 25, lines 52-63). As such, *Onkels* cannot render claims 8-10, 15-17, 22-24, 33-35, 41-43, and 50-52 obvious, either alone or in combination with *Cielo*. Applicants therefore respectfully request that the rejection with respect to claims 8-10, 15-17, 22-24, 33-35, 41-43, and 50-52 be withdrawn.

IV. Amendment to the Claims

Unless otherwise specified, amendments to the claims are made for purposes of clarity, and are not intended to alter the scope of the claims or limit any equivalents thereof. The amendments are supported by the specification and do not add new matter to the specification.

V. Conclusion

In view of the above, it is respectfully submitted that the application is now in condition for allowance. Reconsideration of the pending claims and a notice of allowance is respectfully requested.

The Commissioner is hereby authorized to charge any deficiency in the fees filed, asserted to be filed, or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 50-1703, under Order No. LMPY-11310. **A duplicate copy of the transmittal cover sheet attached to this Response to Office Action Mailed September 10, 2004, is provided herewith.**

Respectfully submitted,

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